(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau OMP



(43) International Publication Date 17 June 2004 (17.06.2004)

PCT

(10) International Publication Number WO 2004/051247 A3

(51) International Patent Classification⁷: G01N 27/447

(21) International Application Number:

PCT/US2003/038170

(22) International Filing Date: 1 December 2003 (01.12.2003)

(25) Filing Language:

60/447,997

60/471,616

60/471,595

English

(26) Publication Language:

English

(30) Priority Data: 60/430,493 2 December

2 December 2002 (02.12.2002) US 18 February 2003 (18.02.2003) US 19 May 2003 (19.05.2003) US 19 May 2003 (19.05.2003) US

(71) Applicant (for all designated States except US): PROTA-SIS CORPORATION [US/US]; 734 Forest Street, Marlborough, MA 01752 (US).

(72) Inventors; and

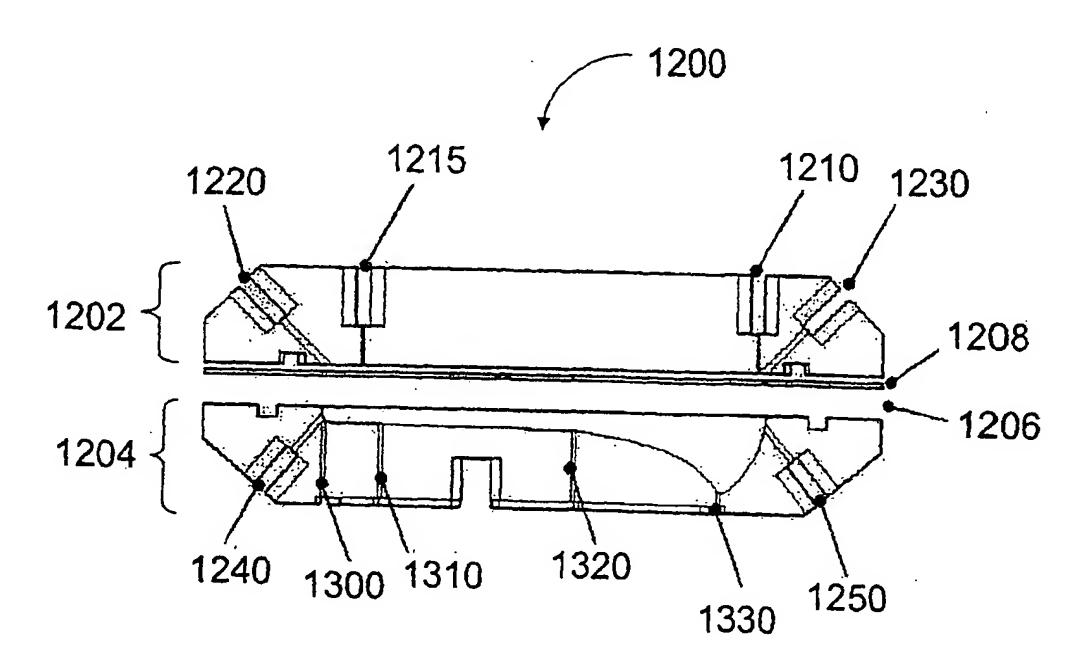
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[US/US]; 16 Nason Hill Lane, Sherborn, MA 01770 (US). LEATZOW, Dan, M. [US/US]; 1345 NE Terreview Drive, Section D, Pullman, WA 99163-5101 (US).

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- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: ELECTROPHORETIC DEVICE COMPRISING SEPARATION CHAMBER, NON-UNIFORM ELECTRODE CHAMBER, AND A POROUS MEMBRANE BETWEEN THEM



(57) Abstract: An electrophoretic device comprises a separation chamber and an electrode chamber, which is non-uniform. The electrode chamber includes two or more electrodes or may include an electrode array. Molecular sieve may be included in the separation chamber, and the molecular sieve is operative to shift the location at which a stationary focused band of a charged analyte forms under a given set of focusing process parameters. Such systems are especially suitable for linking up analytical instruments in a hyphenated fashion, particularly where the instruments have differing system parameters.

WO 2004/051247 A3



Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
10 September 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

IN RNATIONAL SEARCH REPORT

Interional Application No PCT/US 03/38170

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 GO1N27/447

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols) IPC 7 GOIN

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS

Chation of document, with indication, where appropriate, of the relevant pessages	Relevant to claim No.
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-/	
	29 March 1994 (1994-03-29)

X Further documents are listed in the continuation of box C.	X Patent family members are listed in annex.
 Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date daimed 	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family
Date of the actual completion of the International search 16 July 2004	Date of mailing of the international search report 2 6. 07. 2004
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl. Fax: (+31-70) 340-3016	Authorized officer Wilhelm, J

Form PCT/ISA/210 (second sheet) (January 2004)

IMMERNATIONAL SEARCH REPORT

Intentional Application No PCT/US 03/38170

US 2002/043462 A1 (HUANG ZHENG ET AL) 18 April 2002 (2002-04-18) 21-23, 26,27, 32, 34-46, 50,52, 54-56, 71-84 9,13-16, '0144!; claims 15,43; figures 1,2 (KOEGLER WENDY S ET AL: "Field gradient focusing: A novel method for protein separation" focusing: A novel method for protein separation separation separation separation separation separation separation separation for separation for separation separation separation separation for separation sep	Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No.	Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No.	0 / O = 11		PCT/US 03/38170
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18 April 2002 (2002-04-18) 26,27, 32, 34-46, 50,52, 54-56, 71-84 paragraphs '0052!, '0112!, '0113!, '0144!; claims 15,43; figures 1,2 KOEGLER WENDY S ET AL: "Field gradient focusing: A novel method for protein separation" BIOTECHNOLOGY PROGRESS, vol. 12, no. 6, 1996, pages 822-836, XP002277720 ISSN: 8756-7938 15-67, 62-65, abstract; figures 2,7 IVORY C F ET AL: "CONTINUOUS COUNTERACTING CHROMATOGRAPHIC ELECTROPHORESIS" BIOTECHNOLOGY PROGRESS, vol. 6, no. 1, 1990, pages 21-32, XP002277721 ISSN: 8756-7938 figures 1,4,6,10,12 US 5 582 705 A (LI OINGBO ET AL) 10 December 1996 (1996-12-10) 21,24, 25, 71-73, figure 1 EP 1 044 716 A (CAHILL MICHAEL DR; NORDHEIM ALFRED PROF DR (DE); DRUKIER ANDRZEY DR () 18 October 2000 (2000-10-18) 26, 70, 50, 50, 50, 50, 50, 50, 50, 50, 50, 5	18 April 2002 (2002-04-18) 26,27, 32, 34-46, 50,52, 54-56, 71-84 paragraphs '0052!, '0112!, '0113!, '0144!; claims 15,43; figures 1,2 KOEGLER WENDY S ET AL: "Field gradient focusing: A novel method for protein separation" BIOTECHNOLOGY PROGRESS, vol. 12, no. 6, 1996, pages 822-836, XP002277720 ISSN: 8756-7938 15-8, 26, 28-33, 39-53, 15-57, 62-65, 68,70 10,11, 17-23, 68,70 11,01,11, 17-23, 26, 28-33, 39-53, 55-57, 62-65, 68,70 11,01,12,13, 12,14, 13,14,15,15,15,15,15,15,15,15,15,15,15,15,15,	18 April 2002 (2002-04-18) 26,27, 32, 34-46, 50,52, 54-56, 71-84 paragraphs '0052!, '0112!, '0113!, '0144!; claims 15,43; figures 1,2 KOEGLER WENDY S ET AL: "Field gradient focusing: A novel method for protein separation" BIOTECHNOLOGY PROGRESS, vol. 12, no. 6, 1996, pages 822-836, XP002277720 ISSN: 8756-7938 15-8, 26, 28-33, 39-53, 15-57, 62-65, 68,70 10,11, 17-23, 68,70 11,01,11, 17-23, 26, 28-33, 39-53, 55-57, 62-65, 68,70 11,01,12,13, 12,14, 13,14,15,15,15,15,15,15,15,15,15,15,15,15,15,	alegory	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

PCT/US 03/38170

This international Search Report has not been established in respect of certain claims under. Article 17(2)(e) for the following reasons: 1. Claims Nos.:	Box I Observations	where certain claims were found unsearchable (Continuation of item 1 of first sheet)
because they relate to subject matter not required to be searched by this Authority. namely: 2. Claims Nos.: leadable they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful international Search can be carried out, specifically: 3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third serviences of Pule 6.4(a). Box II Observations where unity of Invention is tacking (Continuation of Item 2 of first sheet) This international Searching Authority found multiple inventions in this International application, as follows: See additional sheet As all required additional search feas were timely paid by the applicant, this International Search Report covers all searchable claims could be searched without effort justifying an additional search feasing or any additional fea. As all searchable claims could be searched without effort justifying an additional fea, this Authority did not invite payment of any additional feasing to which feas were timely paid by the applicant, this International Search Report covers only those claims for which feas were paid, specifically claims Nos.: No required additional search fease were timely paid by the applicant. Consequently, this International Search Report is restricted to the invanion first mentioned in the dalms; it is covered by dalms Nos.:	This International Search	Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful international Search can be carried out, specifically. 3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a). Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet) This international Searching Authority found multiple inventions in this international application, as follows: See additional sheet As all required additional search fees were timely paid by the applicant, this international Search Report covers all of any additional fee. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee. As only some of the required additional search fees were timely paid by the applicant, this international Search Report covers only those claims for which fees were paid, specifically claims Nos.: No required additional search fees were finely paid by the applicant. Consequently, this international Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:	1. Claims Nos.: because they re	ate to subject matter not required to be searched by this Authority, namely:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a). Box II Observations where unity of invention is tacking (Continuation of item 2 of first sheet) This International Searching Authority found multiple Inventions in this international application, as follows: see additional sheet As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.: No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:	because they rel	ate to parts of the International Application that do not comply with the prescribed requirements to such meaningful International Search can be carried out, specifically:
his international Searching Authority found multiple Inventions in this International application, as follows: see additional sheet As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.: No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:	because they are	
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As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.: No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:	his International Searchin	g Authority found multiple inventions in this international application, as follows:
As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.: No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:	see additi	onal sheet
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emark on Protest The additional sparch food ward popularity to the standard built and the	No required addition restricted to the investigation	onal search fees were timely paid by the applicant. Consequently, this International Search Report is vention first mentioned in the claims; it is covered by claims Nos.:
No protest accompanied the payment of additional search fees.	emark on Protest	The additional search fees were accompanied by the applicant's protest.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-20, 57-70

Electrophoretic device with separation chamber, non-uniform electrophoresis chamber, and porous membrane between them

2. claims: 21-56, 71-86

Electrophoresis device with sample treatment devices at the inlet and the outlet of the separation chamber

INTERNATIONAL SEARCH REPORT

"Information on patent family members

Interpional Application No
PCT/US 03/38170

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